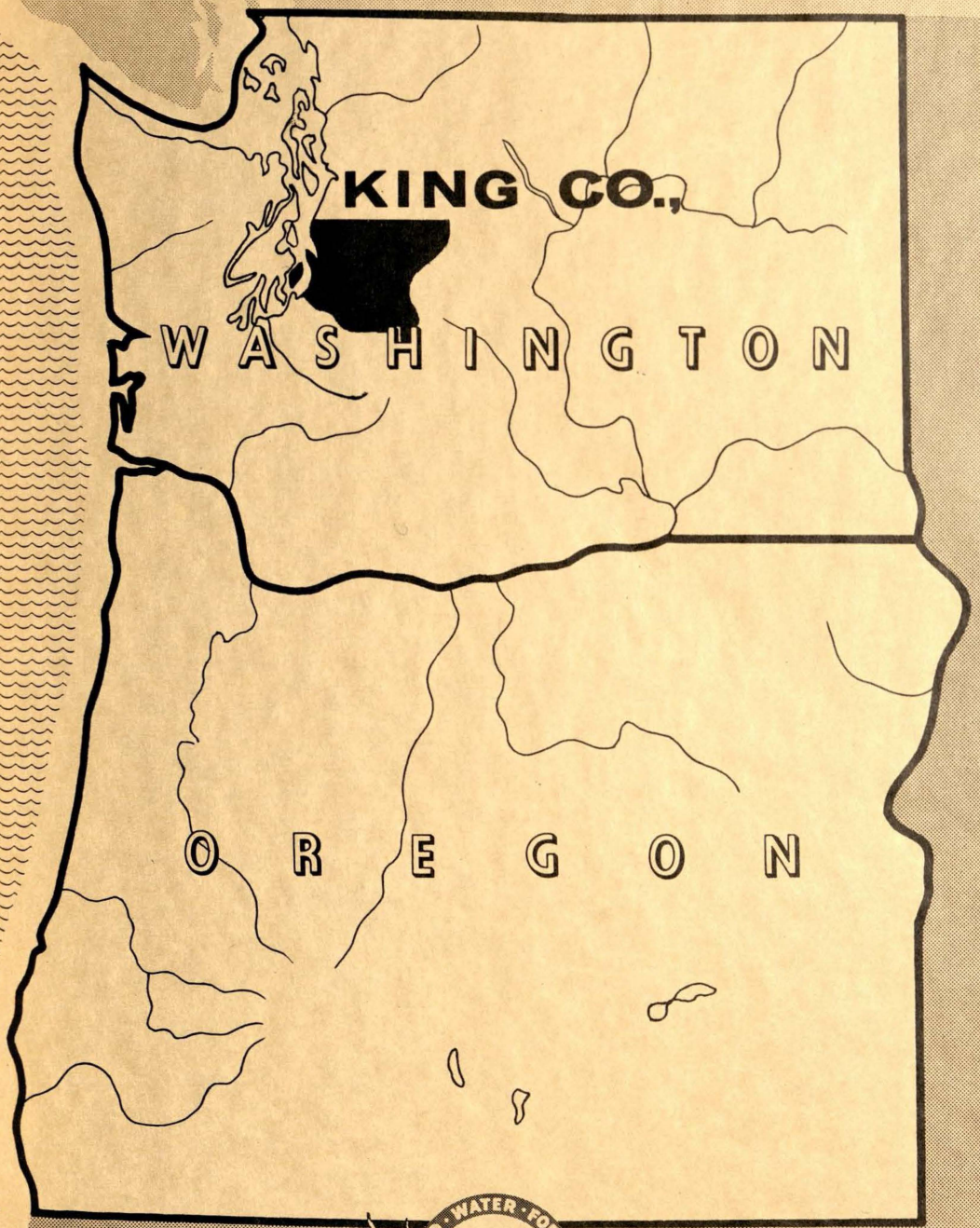
STATION LIBRARY COPY

FOREST SURVEY REPORT 143
JUNE 1962

Forest Statistics for



PACIFIC NORTHWEST
FOREST AND RANGE EXPERIMENT STATION
U.S. DEPT. OF AGRICULTURE · FOREST SERVICE

PREPARED BY

THE DIVISION OF FOREST ECONOMICS RESEARCH

Carl A. Newport, Chief

FOREST SURVEY

Melvin E. Metcalf, In Charge

Field and Office Work in

King County, Washington, by:

Benjamin Spada, Field Supervisor

John M. Berger
James T. Bones
Don Minore
Marlin E. Plank
Richard L. Nielsen
James P. King
Wayne E. Orr
Robert Brisbin

John C. Gordon
James E. Simonson
William L. Ericksen
William Schultheis
Harry Nielsen
Margaret C. O'Mara
Mable A. Northrup
Marian E. Simons

Acknowledgment is made of cooperation from the staff of the Snoqualmie National Forest, who participated in the collection of field data, and from public agencies in furnishing ownership records

Forest Survey Report 143
June 1962

FOREST STATISTICS FOR KING COUNTY, WASHINGTON

by

Benjamin Spada

PACIFIC NORTHWEST
FOREST AND RANGE EXPERIMENT STATION
R. W. Cowlin, Director Portland, Oregon

FOREST SERVICE U.S. DEPARTMENT OF AGRICULTURE

PREFACE

This publication summarizes the results of the third inventory of the forests of King County, Wash., completed in 1960. Previous inventories of King County were made in 1932-33 and 1941. The results of these inventories were published as "Forest Statistics for King County, Washington," March 1934, and "Forest Statistics for King County, Washington," Forest Survey Report 87, April 1942. Such inventories are a part of the Forest Survey, a nationwide project of the Forest Service authorized by the McSweeney-McNary Forest Research Act of 1928, amended June 25, 1949. The purpose of the Forest Survey is to periodically inventory the extent and condition of forest lands and the volume of timber on them, to ascertain rates of forest growth and depletion, to estimate present consumption of timber products and probable future trends in timber requirements, to analyze and make available survey information needed in the formulation of forest policies and programs, and to make resurveys as necessary to keep the basic information up to date.

The Forest Survey is conducted in the various forest regions of the Nation by the regional experiment stations of the Forest Service. In the States of Oregon and Washington, it is an activity of the Pacific Northwest Forest and Range Experiment Station at Portland, Oreg.

The 1960 inventory of King County was based primarily on sampling techniques which did not include a type map, thus no county forest type map was prepared.

CONTENTS

	Page
KING COUNTY'S FOREST RESOURCE IN BRIEF	1
SUMMARY TABLES	2
1. Area by land classes, King County, 1960	2
2. Area of commercial forest land, by stand-size and ownership classes, King County, 1960	3
3. Area of commercial forest land, by stocking classes of growing-stock trees and by stand-size classes, King County, 1960	4
4. Area of commercial forest land, by forest types and ownership classes, King County, 1960	5
5. Area of noncommercial forest land, by forest types, King County, 1960	6
6. Volume of timber on commercial forest land, by class of timber and by softwoods and hardwoods, King County, 1960	7
7. Volume of growing stock and sawtimber on commercial forest land, by ownership classes and by softwoods and hardwoods, King County, 1960	8
8. Volume of growing stock on commercial forest land, by species and diameter classes, King County, 1960	9
9. Volume of sawtimber on commercial forest land, by species and diameter classes, King County, 1960 (International 1/4-inch rule)	10
10. Volume of sawtimber on commercial forest land, by species and diameter classes, King County, 1960 (Scribner rule)	11
11. Volume of salvable dead sawtimber-size trees on commercial forest land, by softwoods and hardwoods, King County, 1960	12
12. Annual mortality of growing stock and sawtimber on commercial forest land, by ownership classes and by softwoods and hardwoods, King County, 1960	13
13. Number of growing-stock trees on commercial forest land, by diameter classes and by softwoods and hardwoods, King County, 1960	14
14. Number of cull and salvable dead trees on commercial forest land, by diameter groups and by softwoods and hardwoods, King County, 1960	15

Page

SUMMARY TABLES (continued)
15. Timber harvest by ownership class, King County, 1950-60 (Scribner rule) 16
16. Sampling error of estimates of forest area and timber volume 17
17. Comparison of forest area statistics for King County, first and second reinventories 19
18. Comparison of timber volume statistics for King County, first and second reinventories 19

ACCURACY OF THE 1960 REINVENTORY DATA 17
Forest Area and Timber Volume 17

DIFFERENCES IN RESULTS OF INVENTORIES 18

FOREST SURVEY PROCEDURE 20

DEFINITION OF TERMS 21
Land Area 21
Forest Land Classes 21
Types 21
Tree Classes 22
Stand-Size Classes 23
Stocking 24
Timber Volume 24
Ownership Classes 25

TREE SPECIES 26

RECENT FOREST SURVEY REPORTS 27

KING COUNTY'S FOREST RESOURCE IN BRIEF

COMMERCIAL FOREST LAND--

Covers 60 percent of the county area or 825,000 acres;
Has decreased by about 150,000 acres between inventories;
Is 42 percent publicly owned; and
Is composed of 20 percent hardwood types and 80 percent softwood types.

GROWING STOCK VOLUME--

Amounts to 3,850 million cubic feet;
Is 60 percent publicly owned; and
Is 93 percent softwoods.

SAWTIMBER VOLUME--

Totals 18,997 million board feet, International 1/4-inch rule (17,625 million board feet, Scribner rule);
Is 57 percent publicly owned;
Is 96 percent softwoods; and
Is 56 percent in trees less than 29 inches in diameter.

NATIONAL FOREST OWNERSHIP--

Controls 27 percent of the commercial forest area;
Has 44 percent of the sawtimber volume;
Has 37 percent of the county's sawtimber area; and
Has 85 percent of its commercial forest area in sawtimber stands.

OTHER PUBLIC OWNERSHIP--

Holds 14 percent of the commercial forest area;
Has 13 percent of the sawtimber volume; and
Has 11 percent of the county's sawtimber area.

FOREST INDUSTRY OWNERSHIP--

Holds 32 percent of both the commercial forest area and sawtimber volume;
Has 33 percent of the county's sawtimber area; and
Has 63 percent of its commercial forest area in sawtimber stands.

FARMER AND MISCELLANEOUS PRIVATE OWNERSHIP--

Controls 27 percent of the commercial forest area;
Has 11 percent of the sawtimber volume;
Has 19 percent of the county's sawtimber area; and
Has 38 percent of the county's seedling, sapling, poletimber, and nonstocked area.

AVERAGE ANNUAL CUT FOR THE PAST 5 YEARS--

Has been 260 million board feet, International 1/4-inch rule (241 million board feet, Scribner rule); and
Has been 98 percent softwoods.

Table 1.--Area by land classes, King County, 1960

(In acres)

Land class	Area
Commercial forest	825,000
Unproductive forest	108,000
Productive-reserved forest	16,000
Total forest	949,000
Nonforest	1/ 417,000
All land	2/ 1,366,000

1/ Includes 2,660 acres of water according to Survey standards of area classification but defined by Bureau of the Census as land, and 286,620 acres classified as urban area and eliminated from the inventory.

2/ From the U.S. Bureau of the Census, Land and Water Area of the United States, 1950.

Table 2.--Area of commercial forest land, by stand-size and ownership classes, King County, 1960

(In acres)

Stand-size class	All ownerships	National forest	Other public	Forest industry	Farmer and miscellaneous private
Sawtimber stands:					
Large	237,000	104,000	30,000	85,000	18,000
Small	269,000	84,000	24,000	81,000	80,000
Total	506,000	188,000	54,000	166,000	98,000
Poletimber stands	230,000	21,000	49,000	69,000	91,000
Sapling and seedling stands	79,000	10,000	16,000	27,000	26,000
Nonstocked areas	10,000	2,000	3,000	1,000	4,000
All classes	825,000	221,000	122,000	263,000	219,000

Table 3.--Area of commercial forest land, by stocking classes of growing-stock trees and by stand-size classes, King County, 1960

(In acres)

Stocking class	All stands	Sawtimber stands	Poletimber stands	Sapling and seedling stands	Nonstocked stands
70 percent or more	673,000	455,000	176,000	42,000	--
40 to 70 percent	114,000	42,000	45,000	27,000	--
10 to 40 percent	28,000	9,000	9,000	10,000	--
Less than 10 percent	10,000	--	--	--	10,000
All classes	825,000	506,000	230,000	79,000	10,000

Table 4.--Area of commercial forest land, by forest types and ownership classes, King County, 1960

(In acres)

Type	All ownerships	Public ownerships	Private ownerships
Douglas-fir	255,000	99,000	156,000
Western hemlock	207,000	87,000	120,000
Western white pine	1,000	1,000	--
Western redcedar	27,000	8,000	19,000
Alaska-cedar	4,000	4,000	--
True fir—mountain hemlock	155,000	116,000	39,000
Sitka spruce	3,000	--	3,000
Red alder	131,000	14,000	117,000
Other hardwoods	32,000	9,000	23,000
Nonstocked	10,000	5,000	5,000
All types	825,000	343,000	482,000

Table 5.--Area of noncommercial forest land, by forest types, King County, 1960

(In acres)

Type	All areas	Productive-reserved areas	Unproductive areas
Douglas-fir	7,000	7,000	--
Western hemlock	1,000	1,000	--
Red alder	7,000	7,000	--
Nonstocked	1,000	1,000	--
Subalpine	21,000	--	21,000
Noncommercial rocky	87,000	--	87,000
All types	124,000	16,000	108,000

Table 6.--Volume of timber on commercial forest land, by class of timber and by softwoods and hardwoods, King County, 1960

Class of timber	All species	Softwoods	Hardwoods
	Million cubic feet		
Sawtimber trees:			
Saw-log portion	3,099	2,981	118
Upper-stem portion	233	224	9
Total	3,332	3,205	127
Poletimber trees	518	359	159
All growing-stock trees	3,850	3,564	286
Sound cull trees:			
Sawtimber-size	3	2	1
Poletimber-size	11	2	9
Total	14	4	10
Rotten cull trees:			
Sawtimber-size	7	7	--
Poletimber-size	--	--	--
Total	7	7	--
Salvable dead trees:			
Sawtimber-size	92	91	1
Poletimber-size	--	--	--
Total	92	91	1
Total, all timber	3,963	3,666	297

Table 7.--Volume of growing stock and sawtimber on commercial forest land, by ownership classes and by softwoods and hardwoods, King County, 1960

Timber and ownership classes	All species	Softwoods	Hardwoods
	Million cu. ft.	Million cu. ft.	Million cu. ft.
Growing stock:			
National forest	1,630	1,622	8
Other public	621	604	17
Forest industry	1,066	947	119
Farmer and miscellaneous private	533	391	142
All ownerships	3,850	3,564	286
	Million bd. ft.	Million bd. ft.	Million bd. ft.
Sawtimber (International ¼-inch rule):			
National forest	8,317	8,295	22
Other public	2,457	2,426	31
Forest industry	6,138	5,831	307
Farmer and miscellaneous private	2,085	1,803	282
All ownerships	18,997	18,355	642
Sawtimber (Scribner rule):			
National forest	7,705	7,684	21
Other public	2,278	2,248	30
Forest industry	5,699	5,401	298
Farmer and miscellaneous private	1,943	1,670	273
All ownerships	17,625	17,003	622

Table 8.--Volume of growing stock on commercial forest land, by species and diameter classes, King County, 1960

Species	Diameter class (inches at breast height)										
	All classes	5.0-6.9	7.0-8.9	9.0-10.9	11.0-12.9	13.0-14.9	15.0-16.9	17.0-18.9	19.0-28.9	29.0-38.9	39.0 and larger
	Million cubic feet										
Softwoods:											
Douglas-fir	931	33	45	51	57	66	62	64	262	124	167
Western white pine	33	--	--	--	1	15	2	3	5	2	5
Grand fir	1	--	--	--	--	--	1	--	--	--	--
Pacific silver fir	759	16	24	24	36	32	59	63	286	161	58
Noble fir	108	1	2	2	3	5	4	4	40	30	17
Subalpine fir	8	2	1	--	1	1	1	--	2	--	--
Sitka spruce	9	--	--	--	1	--	--	1	4	2	1
Mountain hemlock	270	2	4	8	11	18	18	23	82	59	45
Western hemlock	1,155	27	40	52	63	64	69	73	339	233	195
Alaska-cedar	34	--	1	1	1	1	1	1	7	8	13
Western redcedar	256	5	9	10	9	10	10	9	41	42	111
Total	3,564	86	126	148	183	212	227	241	1,068	661	612
Hardwoods:											
Red alder	203	36	53	45	33	20	9	5	2	--	--
Oregon ash	(1/)	--	--	--	--	--	--	--	--	--	--
Black cottonwood	13	--	1	1	1	1	1	1	4	3	--
Bigleaf maple	70	6	8	9	8	7	8	6	15	3	--
Total	286	42	62	55	42	28	18	12	21	6	--
All species	3,850	128	188	203	225	240	245	253	1,089	667	612

1/ Less than 500,000 cubic feet.

Table 9.--Volume of sawtimber on commercial forest land, by species and diameter classes, King County, 1960 (International ¼-inch rule)

Species	Diameter class (inches at breast height)							
	All classes	11.0-12.9	13.0-14.9	15.0-16.9	17.0-18.9	19.0-28.9	29.0-38.9	39.0 and larger
	Million board feet							
Softwoods:								
Douglas-fir	4,922	237	304	314	355	1,596	850	1,266
Western white pine	116	3	3	8	14	33	14	41
Grand fir	2	--	--	2	--	--	--	--
Pacific silver fir	3,696	150	195	248	282	1,463	969	389
Noble fir	580	17	21	19	22	222	183	96
Subalpine fir	22	4	2	2	2	7	1	4
Sitka spruce	47	2	1	--	4	20	14	6
Mountain hemlock	1,357	43	72	81	101	440	340	280
Western hemlock	6,265	284	319	359	402	2,020	1,551	1,330
Alaska-cedar	169	4	2	5	3	32	47	76
Western redcedar	1,179	26	38	41	42	219	261	552
Total	18,355	770	957	1,079	1,227	6,052	4,230	4,040
Hardwoods:								
Red alder	339	151	100	46	29	13	--	--
Oregon ash	1	--	1	--	--	--	--	--
Black cottonwood	58	5	6	8	3	24	12	--
Bigleaf maple	244	36	32	41	32	83	20	--
Total	642	192	139	95	64	120	32	--
All species	18,997	962	1,096	1,174	1,291	6,172	4,262	4,040

Table 10.--Volume of sawtimber on commercial forest land, by species and diameter classes, King County, 1960 (Scribner rule)

Species	Diameter class (inches at breast height)							
	All classes	11.0-12.9	13.0-14.9	15.0-16.9	17.0-18.9	19.0-28.9	29.0-38.9	39.0 and larger
	Million board feet							
Softwoods:								
Douglas-fir	4,540	204	263	271	306	1,477	801	1,218
Western white pine	108	3	3	8	13	31	13	37
Grand fir	2	--	--	2	--	--	--	--
Pacific silver fir	3,422	140	180	229	261	1,355	897	360
Noble fir	538	16	19	18	21	205	169	90
Subalpine fir	21	4	2	2	2	7	1	3
Sitka spruce	45	2	1	--	4	19	13	6
Mountain hemlock	1,255	39	66	75	93	408	315	259
Western hemlock	5,801	263	295	332	372	1,870	1,437	1,232
Alaska-cedar	159	3	2	4	3	31	44	72
Western redcedar	1,112	25	36	38	39	206	247	521
Total	17,003	699	867	979	1,114	5,609	3,937	3,798
Hardwoods:								
Red alder	327	143	97	45	29	13	--	--
Oregon ash	1	--	1	--	--	--	--	--
Black cottonwood	56	5	5	7	3	23	13	--
Bigleaf maple	238	35	31	40	31	82	19	--
Total	622	183	134	92	63	118	32	--
All species	17,625	882	1,001	1,071	1,177	5,727	3,969	3,798

Table 11.--Volume of salvable dead sawtimber-size trees on commercial forest land, by softwoods and hardwoods, King County, 1960

Species group	Volume	
	International ¼-inch rule	Scribner rule
	Million board feet	
Softwoods	550	510
Hardwoods	5	4
All species	555	514

Table 12.--Annual mortality of growing stock and sawtimber on commercial forest land, by ownership classes and by softwoods and hardwoods, King County, 1960

Ownership class	Growing stock			Sawtimber (International 1/4-inch rule)			Sawtimber (Scribner rule)		
	All species	Softwoods	Hardwoods	All species	Softwoods	Hardwoods	All species	Softwoods	Hardwoods
	---Million cubic feet---			---Million board feet---			---Million board feet---		
National forest	7	7	--	34	34	--	31	31	--
Other public	4	4	--	18	18	--	17	17	--
Forest industry	8	7	1	30	29	1	28	27	1
Farmer and miscellaneous private	4	3	1	12	11	1	11	10	1
All ownerships	23	21	2	94	92	2	87	85	2

Table 13.--Number of growing-stock trees on commercial forest land, by diameter classes and by softwoods and hardwoods, King County, 1960

Diameter class (inches d.b.h.)	All species	Softwoods	Hardwoods
5.0 - 6.9	48,113,000	37,779,000	10,334,000
7.0 - 8.9	27,094,000	19,578,000	7,516,000
9.0 - 10.9	16,051,000	12,208,000	3,843,000
11.0 - 12.9	10,915,000	8,909,000	2,006,000
13.0 - 14.9	7,554,000	6,630,000	924,000
15.0 - 16.9	5,397,000	4,935,000	462,000
17.0 - 18.9	4,194,000	3,973,000	221,000
19.0 - 28.9	9,858,000	9,570,000	288,000
29.0 - 38.9	2,952,000	2,914,000	38,000
39.0 and larger	1,389,000	1,389,000	--
All classes	133,517,000	107,885,000	25,632,000

Table 14.--Number of cull and salvable dead trees on commercial forest land, by diameter groups and by softwoods and hardwoods, King County, 1960

Diameter class (inches d.b.h.)	Cull trees	Salvable dead trees
Softwoods:		
5.0 - 10.9	358,000	--
11.0 - 18.9	276,000	782,000
19.0 and larger	561,000	407,000
Total	1,195,000	1,189,000
Hardwoods:		
5.0 - 10.9	3,129,000	--
11.0 - 18.9	77,000	40,000
19.0 and larger	15,000	1,000
Total	3,221,000	41,000
All species	4,416,000	1,230,000

Table 15.--Timber harvest by ownership class, King County, 1950-60 (Scribner rule)

Year[1/]	Private	State	National forest	Other public	Total
	Thousand board feet				
1950	172,282		17,900	173	190,355
1951	186,002		26,600	1,000	213,602
1952	211,858		33,400	--	245,258
1953	171,232		28,300	--	199,532
1954	193,825		4,600	--	198,425
1955	229,197	15,822	8,605	71	253,695
1956	246,986	43,045	17,700	105	307,836
1957	197,267	8,768	29,654	--	235,689
1958	204,277	744	21,325	--	226,346
1959	166,796	1,231	25,093	--	193,120
1960	273,804	4,118	28,099	1,035	307,056

[1/] For the years 1950-54, data for private and State ownerships were not separated.

ACCURACY OF THE 1960 REINVENTORY DATA

Forest Area and Timber Volume

For the area within the boundary of the Skykomish Working Circle of the Snoqualmie National Forest, acreages of forest type, stand-size class, and stocking class were obtained from a forest type map. Thus, no error due to sampling was involved in this area. Errors due to techniques or judgment in the field may have occurred. Throughout all phases of the work, however, close supervision and frequent checks assured a high level of accuracy and uniformity of standards.

Estimates of forest area for the remainder of the county and estimates of timber volume for the entire county were obtained by sampling and therefore have sampling errors. Sampling errors were calculated for only the major items as shown in table 16.

Table 16 implies that the values which would result from a 100-percent sample lie within the ranges indicated for the specified probabilities.

Table 16.--Sampling error of estimates of forest area and timber volume

Item	Estimated total	Sampling error in percent	
		Odds, 2 out of 3	Odds, 19 out of 20
Commercial forest land	825,000 acres	±1.8	±3.5
Noncommercial forest land	124,000 acres	±7.2	±14.1
Volume (Scribner)	17,625 million board feet	±5.7	±11.3
Volume	3,850 million cubic feet	±4.8	±9.3

Sampling errors for estimates other than total area or total volume were not calculated. However, sampling errors for these can be roughly approximated by using figure 1, page 18.

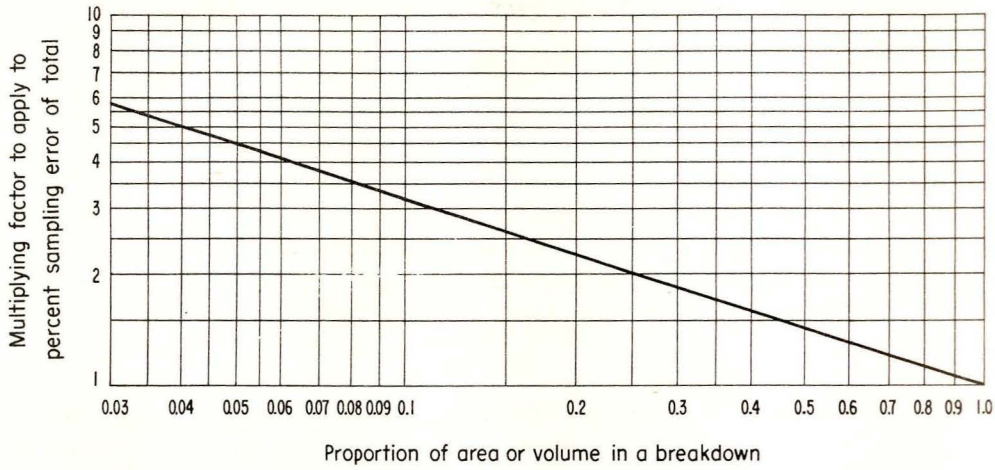


Figure 1.--Ratio of sampling error of an area or volume breakdown to sampling error of total area or volume.

For example, assume that the sampling error reported for a total is ±5 percent, and an estimate of the sampling error for an item which is only 0.25 of this total is desired. Reading from figure 1, the multiplying factor for a proportion of 0.25 is 2. The estimated sampling error for the item is then 2 times ±5 percent, the sampling error of the total, or ±10 percent.

DIFFERENCES IN RESULTS OF INVENTORIES

Some of the differences between the forest-area and timber-volume statistics from the first and second reinventories are due to physical change, such as cutting of stands, restocking of deforested areas, and growth of stands into the next larger size class. Some are due to variations in the procedures used to interpret and classify forest conditions, to variations in standards of utilization, to changes in Forest Survey standards and definitions, and to areas excluded from the second reinventory because of urban development. These variations make it difficult to draw meaningful conclusions from comparison of the statistics of the two inventories; however, certain general facts concerning King County's present forest condition appear evident. For one, the area of commercial forest land has decreased by about 150,000 acres, principally due to urban development in the western part of the county.

Also, considering the standards of the inventories, it appears likely that there has been a real decline in the volume of Douglas-fir, western hemlock, and western redcedar. It is evident, also, that there has been a real increase in the volume of hardwoods. Most of the hardwood volume occurs on cutover conifer lands which have restocked with hardwoods, and such areas have increased in the past 20 years.

It cannot be said, however, that the volume of such species as mountain hemlock and other softwoods has increased. Rather, they now receive the same consideration as all other species.

Table 17.--Comparison of forest area statistics for King County, first and second reinventories

(In acres)

Land-use class	1941	1960
Commercial forest	977,000	825,000
Noncommercial forest:		
Productive-reserved	1,000	16,000
Unproductive	117,000	108,000
Total noncommercial forest	118,000	124,000
Total forest	1,095,000	949,000
Nonforest	261,000	417,000
All land	1,356,000	1,366,000

Table 18.--Comparison of timber volume statistics for King County, first and second reinventories

(In million board feet, Scribner rule)

Species	1941	1960
Softwoods:		
Douglas-fir	6,362	4,921
Pacific silver fir	3,701	3,696
Mountain hemlock	289	1,357
Western hemlock	6,892	6,265
Western redcedar	1,395	1,179
All other	785	917
Total	19,424	18,335
Hardwoods	42	642
All species	19,466	18,977

FOREST SURVEY PROCEDURE

Procedures used in the second reinventory of King County were materially different from those used in the previous inventories.

The second reinventory of King County was a cooperative project involving both national forest and Forest Survey personnel. The Skykomish Working Circle inventory was completed in 1956 by national forest inventory crews. Other working circles (Cedar River, Green River, Snoqualmie River, and White River) were completed in 1957. Areas outside the national forests were completed in 1959 and 1960.

For the area within the Skykomish Working Circle, type areas were determined by a dot count on the forest type map. The average per-acre volumes for sawtimber stands and poletimber stands were obtained by sampling the stands on randomly selected plots. A field plot consisted of a cluster of three 1/5-acre circular subplots spaced at 6-chain intervals. Volume estimates were calculated by applying average per-acre volumes obtained from the plots to the appropriate forest-type areas.

Land classification for the remainder of the county was based on a systematic grid of plots.

Each subplot was first classified as commercial forest, noncommercial forest, or nonforest. The ratio of subplots in each class to the total number of subplots was applied to the total land area to determine the acreage of each classification. Subplots falling on commercial forest land were also classified by forest type and stand-size class as indicated by the plot tally. The percentage of subplots falling in each type was applied to the total area of commercial forest land in that sample unit to determine the acreage of land in that type.

Volumes were determined in the following manner: For each sample unit, an average volume per acre was determined by species for all subplots falling on commercial forest land. These volumes, expanded by the total acreage of commercial forest land in each sample unit, provided total volume by species for each sample unit inventoried in the county.

DEFINITION OF TERMS

Land Area

Total Land Area

Includes dry land and unmeandered water surfaces.

Forest Land Area

Land at least 10 percent stocked by trees of any size, or formerly having such tree cover, and not currently developed for nonforest use. Minimum area of forest land recognized in reinventory was 10 acres where type maps were used, and 1 acre where sampling procedures were used.

Nonforest Land Area

Land that does not qualify as forest land. Minimum area recognized in the reinventory of the counties was 10 acres where type maps were used and 1 acre where sampling procedures were used.

Forest Land Classes

Commercial Forest Land Area

Forest land which is producing or capable of producing industrial wood and not withdrawn from timber utilization.

Noncommercial Forest Land Area

Unproductive forest land incapable of yielding crops of industrial wood because of adverse site conditions, and productive public forest land withdrawn from commercial timber use through statute or administrative regulation.

Types

Commercial Forest Land Type

Forest land is typed on the basis of the predominant species, as indicated by cubic volume for sawtimber and poletimber stands and number of trees for sapling and seedling stands, or on the basis of forest condition, such as non-stocked cutover or burned-over land. Where none of the indicated species comprise 50 percent or more of a given stand, the stand is classified on the basis of plurality of cubic volume or number of trees. In classifying forest land by type, the minimum area recognized is 1 acre.

Noncommercial Forest Land Types

Productive-reserved. Public forest land withdrawn from timber utilization through statute, ordinance, or administrative order but which otherwise qualifies as commercial forest land. Types designated the same as for commercial forest land.

Unproductive. Forest land incapable of yielding crops of industrial wood products (usually sawtimber) because of adverse site conditions.

Subalpine. Forest stands at the upper elevational limits of tree growth.

Noncommercial rocky. Areas within the commercial forest zone but so steep and rocky that they are incapable of producing usable wood products.

Nonforest Land Types

Vegetative. Cultivated land, stump pasture, grass, or brush on nonforest land.

Nonvegetative. Includes barrens and towns.

Unmeandered water. Includes unmeandered streams and lakes, and tideflats.

Tree Classes

Sawtimber Tree

Tree of commercial species, 11.0 inches d.b.h. and larger, that contains at least one 16-foot coniferous saw log or one 8-foot hardwood saw log to a variable top diameter never less than 8 inches inside the bark. Also, 25 percent or more of the gross board-foot volume must be free from rot or defect.

Poletimber Tree

Tree of commercial species, 5.0 to 10.9 inches d.b.h., in which 25 percent or more of the gross cubic-foot volume is free from rot and defect.

Sapling and Seedling Trees

Live trees of commercial species, less than 5.0 inches d.b.h., and of good form and vigor.

Cull Tree

Live tree of sawtimber or poletimber size that is unmerchantable for saw logs, now or prospectively, because of defect, rot, or species.

Sound cull tree. Live tree of sawtimber or poletimber size that contains 25 percent or more of sound volume but will not make at least one merchantable saw log, now or prospectively, because of roughness, poor form, or species.

Rotten cull tree. Live tree of sawtimber or poletimber size in which less than 25 percent of the total volume is sound.

Mortality Tree

Tree which has died from natural causes and which was not a cull tree at the time of death.

Salvable Dead Tree

Standing or down dead tree that contains 25 percent or more of sound volume and at least one merchantable 16-foot coniferous or 8-foot hardwood saw log.

Stand-Size Classes

Sawtimber Stand

Stand of sawtimber trees having a minimum per-acre net volume of 1,500 board feet (International 1/4-inch rule).

Large sawtimber stand. Stand in which the majority of the volume is in trees 21.0 inches d.b.h. and larger.

Small sawtimber stand. Stand in which the majority of the volume is in trees from 11.0 to 20.9 inches d.b.h.

Poletimber Stand

Stand failing to meet sawtimber stand specifications but at least 10 percent stocked with poletimber and larger (5.0 inches d.b.h. and larger) trees and with at least half the minimum stocking in poletimber trees.

Sapling and Seedling Stand

Stand not qualifying as either a sawtimber or poletimber stand but at least 10 percent stocked with trees of commercial species and with at least half the minimum stocking in sapling and seedling trees.

Nonstocked Area

An area less than 10 percent stocked with present or potential growing-stock trees.

Stocking

Stocking is the extent to which growing space is effectively utilized by present or potential growing-stock trees of commercial species. "Degree of stocking" is synonymous with "percentage of growing space occupied" and means the ratio of actual stocking to full stocking for comparable sites and stands. Stocking may be measured in terms of number of trees, volume, basal area, cover canopy, or other criterion or combination of criteria.

Well-Stocked Stand

A stand that is 70 percent or more stocked with present or potential growing-stock trees.

Medium-Stocked Stand

A stand that is 40 to 69 percent stocked with present or potential growing-stock trees.

Poorly Stocked Stand

A stand that is 10 to 39 percent stocked with present or potential growing-stock trees.

Nonstocked Area

An area less than 10 percent stocked with present or potential growing-stock trees.

Timber Volume

Live Sawtimber Volume

Net volume in board feet of live sawtimber trees of commercial species:

Scribner rule. The common board-foot log rule used in determining volume of sawtimber in the Pacific Northwest.

International 1/4-inch rule. The standard board-foot log rule adopted nationally by the Forest Service for the presentation of Forest Survey volume statistics.

Growing Stock

Net volume in cubic feet of live sawtimber trees and live poletimber trees from stump to a minimum 4.0-inch top (of central stem) outside bark.

All-Timber Volume

Net volume in cubic feet of live and salvable dead sawtimber trees and poletimber trees of commercial species, and cull trees of all species from stump to a minimum 4.0-inch top outside bark.

Ownership Classes

National Forest Lands

Federal lands which have been designated by Executive order or statute as national forests or purchase units, and other lands under the administration of the Forest Service, including experimental areas and Bankhead-Jones title III lands.

Other Federal Lands

Federal lands other than national forests, including lands administered by the Bureau of Land Management, Bureau of Indian Affairs, and miscellaneous Federal agencies.

State, County, and Municipal Lands

Lands owned by States, counties, and local public agencies, or lands leased by these governmental units for more than 50 years.

Forest Industry Lands

Lands owned by companies or individuals operating wood-using plants.

Farmer-Owned Lands

Lands owned by operators of farms.

Miscellaneous Private Lands

Privately owned lands other than forest industry or farmer-owned lands.

TREE SPECIES

Tree species commonly found in King County include:

Softwoods:

- Alaska-cedar (*Chamaecyparis nootkatensis*)
- Douglas-fir (*Pseudotsuga menziesii*)
- Grand fir (*Abies grandis*)
- Mountain hemlock (*Tsuga mertensiana*)
- Noble fir (*Abies procera*)
- Pacific silver fir (*Abies amabilis*)
- Sitka spruce (*Picea sitchensis*)
- Subalpine fir (*Abies lasiocarpa*)
- Western hemlock (*Tsuga heterophylla*)
- Western redcedar (*Thuja plicata*)
- Western white pine (*Pinus monticola*)

Hardwoods:

- Bigleaf maple (*Acer macrophyllum*)
- Black cottonwood (*Populus trichocarpa*)
- Oregon ash (*Fraxinus latifolia*)
- Red alder (*Alnus rubra*)

RECENT FOREST SURVEY REPORTS

Number	Title	Date
142	Forest Statistics for Island and Kitsap Counties, Washington, 1959; San Juan County, Washington, 1960	May 1962
141	Forest Statistics for Pierce County, Washington	May 1962
140	1960 Washington Log Production	March 1962
139	Forest Statistics for Okanogan County, Washington	March 1962
138	1960 Oregon Log Production	January 1962
137	Forest Statistics for Grant County, Oregon	November 1960
136	Forest Statistics for Southeast Washington	July 1960
135	Forest Statistics for Umatilla and Union Counties, Oregon	April 1960
134	Forest Statistics for Wallowa County, Oregon	April 1960
133	Forest Statistics for Skagit and Whatcom Counties, Washington	September 1959
132	Forest Statistics for Baker and Malheur Counties, Oregon	October 1958
131	Forest Resources and Forest Industries of Lane County, Oregon	December 1957

Available from:
Pacific Northwest Forest and Range Experiment Station
P. O. Box 4059
Portland 8, Oregon

GPO 998240

A13.
14